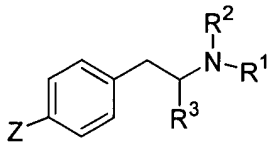
Claims

What is claimed is:

1. A compound having the structure



wherein

R^1 is an alkyl group comprising 2-6 carbon atoms,

R^2 is selected from the group consisting of hydrogen, alkyl groups, and protecting groups,

R^3 is an optionally substituted alkyl group, and

Z is L-X-Q wherein L comprises 1-15 carbon atoms and 0-6 heteroatoms, X is selected from the group consisting of O, CO, NR^4, S, C(=NH)O, NH(CO), NH(CO)NH, NH(CS), NH(CS)NH, O(CO)NH, NH(C=NH), and maleimidothioether, wherein R^4 is selected from the group consisting of hydrogen and alkyl groups, and Q is selected from the group consisting of hydrogen, hydroxyl, leaving groups, macromolecular carriers, and labels.

2. The compound of claim 1 wherein the macromolecular carrier is selected from the group consisting of proteins, polypeptides, and polysaccharides.

3. The compound of claim 1 wherein the macromolecular carrier is selected from the group consisting of keyhole limpet hemocyanin, bovine serum albumin, and bovine thyroglobulin.

4. The compound of claim 1 wherein R^2 is a protecting group or hydrogen.

5. The compound of claim 1 wherein L is $(CH_2)_3$ and X is CO.

6. The compound of claim 1 wherein Q is a leaving group.

7. The compound of claim 1 wherein R^1 is ethyl, R^3 is methyl, and Q is a leaving group comprising N-oxysuccinimide.

8. The compound of claim 7 wherein Q is a leaving group comprising N-oxysuccinimide.

9. The compound of claim 7 wherein Q is a macromolecular carrier selected from the group consisting of a hemocyanin, a globulin, an albumin, and a polysaccharide.

10. Cell line NEAMP 48.2, ATCC designation PTA-5295, producing a monoclonal antibody binding preferentially to MDEA.

11. A monoclonal antibody produced from cell line NEAMP 48.2, ATCC designation PTA-5295, the antibody binding preferentially to MDEA.

12. A monoclonal antibody that binds preferentially to MDEA in a manner equivalent to that of an antibody from cell line NEAMP 48.2, ATCC designation PTA-5295.

13. Cell line NEAMP 62.1, ATCC designation PTA-5294, producing a monoclonal antibody binding preferentially to MDEA.

14. A monoclonal antibody produced from cell line NEAMP 62.1, ATCC designation PTA-5294, the antibody binding preferentially to MDEA.

15. A monoclonal antibody that binds preferentially to MDEA in a manner equivalent to that of an antibody from cell line NEAMP 62.1, ATCC designation PTA-5294.

16. An antibody that preferentially binds MDEA relative to other members of the ecstasy class of drugs.

17. The antibody of claim 16 characterized by having greater than 90% cross-reactivity to N-ethylamphetamine.

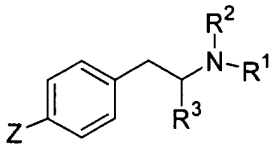
18. The antibody of claim 17 characterized by having greater than 1% cross-reactivity to *d*-methamphetamine.

19. The antibody of claim 16 characterized by having less than 1% cross-reactivity each to ephedrine, pseudoephedrine, and phenylpropanolamine.

20. The antibody of claim 16 characterized by having less than 20% cross-reactivity to N-ethylamphetamine.

21. The antibody of claim 16 characterized by having greater than 40% cross-reactivity to BDB.

22. An antibody generated in response to a compound having the structure



wherein

R^1 is an alkyl group comprising 2-6 carbon atoms,

R^2 is selected from the group consisting of hydrogen, alkyl groups, and protecting groups,

R^3 is an optionally substituted alkyl group, and

Z is L-X-Q wherein L comprises 1-15 carbon atoms and 0-6 heteroatoms, X is selected from the group consisting of O, CO, NR^4, S, C(=NH)O, NH(CO), NH(CO)NH, NH(CS), NH(CS)NH, O(CO)NH, NH(C=NH), and maleimidothioether, wherein R^4 is selected from the group consisting of hydrogen

and alkyl groups, and Q is a macromolecular carrier selected from the group consisting of proteins, polypeptides, and polysaccharides.

23. The antibody of claim 22 wherein the protein is selected from the group consisting of keyhole limpet hemocyanin, bovine serum albumin, and bovine thyroglobulin.

24. The antibody of claim 22 wherein L is $(CH_2)_3$ and X is CO.

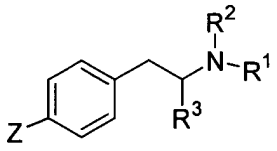
25. The antibody of claim 24 wherein R^1 is ethyl and R^3 is methyl.

26. A reagent kit comprising the antibody of claim 16.

27. A reagent kit comprising the antibody of claim 17.

28. A reagent kit comprising the antibody of claim 18.

29. A method for producing an antibody comprising inoculating a host with an immunogen comprising the structure



wherein

R^1 is an alkyl group comprising 2-6 carbon atoms,

R^2 is selected from the group consisting of hydrogen, alkyl groups, and protecting groups,

R^3 is an optionally substituted alkyl group, and

Z is L-X-Q wherein L comprises 1-15 carbon atoms and 0-6 heteroatoms, X is selected from the group consisting of O, CO, NR^4, S, C(=NH)O, NH(CO), NH(CO)NH, NH(CS), NH(CS)NH, O(CO)NH, NH(C=NH), and maleimidothioether, wherein R^4 is selected from the group consisting of hydrogen

and alkyl groups, and Q is a macromolecular carrier selected from the group consisting of proteins, polypeptides, and polysaccharides.

30. The method of claim 29 wherein L is $(CH_2)_3$ and X is CO.

31. The method of claim 29 wherein R^1 is ethyl and R^3 is methyl.

32. The method of claim 29 wherein Q is a protein selected from the group consisting of hemocyanins, globulins, and albumins.

33. A method for detecting an analyte in a sample comprising:

contacting the sample with the antibody of claim 16,

binding the antibody to the analyte, and

detecting a complex formed by the antibody and the analyte.

34. The method of claim 33 wherein the analyte is selected from the group consisting of an amphetamine, an amphetamine derivative, an ecstasy-class drug, an ecstasy-class drug derivative, and combinations thereof.

35. The method of claim 34 wherein the ecstasy-class drug is MDEA.

36. A method of detecting an analyte in a sample comprising:

contacting the sample with the antibody of claim 17,

binding the antibody to the analyte, and

detecting a complex formed by the antibody and the analyte.

37. The method of claim 36 wherein the analyte is selected from the group consisting of an amphetamine, an amphetamine derivative, an ecstasy-class drug, an ecstasy-class drug derivative, and combinations thereof.

38. The method of claim 37 wherein the ecstasy-class drug is MDEA.